Trend Study 11B-3-00

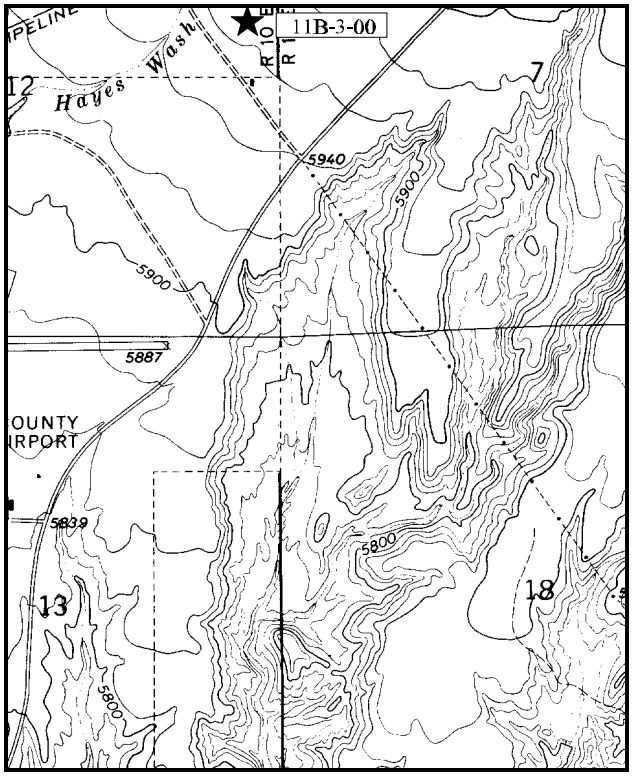
Study site name: Airport . Range type: Chained, Seeded P-J .

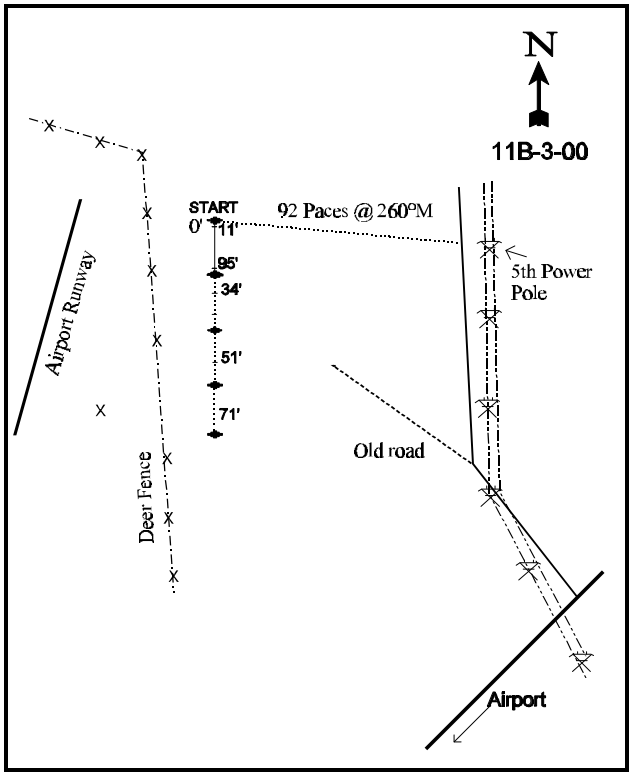
Compass bearing: frequency baseline 165°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (51ft), line 4 (71ft).

LOCATION DESCRIPTION

From the intersection of Main Street and the Airport Road in Price, go 3.15 miles to the airport. Continue on the paved road 0.9 miles past the Carbon County Airport to a point where two power lines cross the road and there is a dirt road turning off to the left. Turn on this road and follow the power line 0.35 miles to the fifth wooden pole. Stop here. Walk west 92 paces @ 260°M to the start of the baseline, a rebar tagged #7891.





Map Name: Wellington

Diagrammatic Sketch

Township 14S , Range l0E , Section 12

UTM. 4385891.538 N, 522163.377 E

DISCUSSION

Trend Study No. 11B-3 (32-3)

The Airport transect is located on a sagebrush flat one mile north and slightly east of the Carbon County Airport. The large flat extends several miles north to the higher benches and mesas of the Book Cliffs. Elevation on the flat is 5,960 feet. Mature juniper stands border the east side. Originally a Wyoming big sagebrush flat with scattered Juniper, the area was chained and drill seeded with crested wheatgrass in 1965-66 by the BLM. Now the area supports a moderately low density of Wyoming big sagebrush with a crested wheatgrass understory. Sometime after the 1994 reading, the Carbon County Airport was expanded with a longer runway. A large deer fence now encloses the airport and is only about 300 feet west of the study site which may concentrate more deer use on the site. Quadrat frequency of deer pellet groups was quite low in 1994 at only 8%. In 2000, frequency increased to 22% which is still moderately low. A pellet group transect read along the baseline in 2000 estimated 23 deer days use/acre (57 ddu/ha). All of the deer pellet groups appear to be from winter use. As part of the Hayes Wash allotment, this area is grazed by 61 cattle from mid-October to the end of May. Utilization of the crested wheatgrass appeared to be moderate to heavy in 1986, but light in 2000 with only a few old cattle pats encountered.

The soil is moderately deep with an effective rooting depth of just over 14 inches. Depth is limited in some areas by a hardpan at about 7 inches in depth which could restrict the density of adult Wyoming sagebrush. The soil has a sandy clay loam texture with a slightly alkaline pH of 7.8. Organic matter is limited at only 1%, which is the lowest reading on the entire unit. Small gravel is common within the profile and concentrated on the surface, indicating soil loss in the past. Some of the gravel is coated with white calcium-carbonate. No gullies are evident. Rows of seeded crested wheatgrass are contoured to the slight slope which limits erosion and also helps the buildup of litter. Windrowed piles of juniper and sagebrush are remnants of the pre-treatment of the flat.

The site supports a moderate stand of Wyoming big sagebrush with just over 1,000 plants/acre estimated in 1986 and 1994, increasing to 2,280 plants/acre in 2000. Forty-seven percent of the plants sampled were decadent in 1986, but this has decreased to only 14% by 1994 and 11% in 2000. Recruitment in the form of seedlings and young is excellent. Currently, (‘00) 32% of the population consists of young plants, indicating an expanding population. Use of the sagebrush was extremely heavy in 1986 when 88% of the plants sampled were heavily hedged. On some plants, the new growth was short and unavailable due to the clubbed aspect of the plant. Use was much lighter in 1994, with only 2% of the sagebrush displaying heavy use. During the 2000 reading, use was mostly light to moderate with only 4% of the plants sampled displaying heavy use. Some sagebrush on this site display characteristics of black sagebrush (*Artemisia nova*), and mountain big sagebrush (*Artemisia tridentata vaseyana*). There is obviously some hybridizing occurring between the sagebrush subspecies. Plants with the heaviest use appeared to have more characteristics of mountain big sagebrush which is the most palatable of the sagebrush subspecies.

Other preferred browse plants include a few green ephedra and fourwing saltbush. Broom snakeweed is the most numerous shrub on the site, and similar to other trend sites in the area, it has increased in density. Density was estimated at only 266 plants/acre in 1986 which increased to 420 by 1994. Currently (‘00), the population has exploded to 8,940 plants/acre. Most of the plants (98%) are mature and decadent so it does not appear that the population will continue to increase in the immediate future.

Crested wheatgrass completely dominates the herbaceous component by providing almost 100% of the herbaceous understory cover. Although seeded 20 years ago, the plants are still confined mainly to the drill rows. Other grass species are uncommon. Forbs are limited and provide little forage except possibly during a wet, favorable spring. The only common species is scarlet globemallow.

1986 APPARENT TREND ASSESSMENT

Past grazing management has maintained the crested wheatgrass which appears to have a stable trend. Although somewhat heavily used and putting on minimal growth, the sagebrush is reproducing and doing fairly well for such a low rainfall area (annual average of about 11 inches in Price). Therefore, the range trend appears stable, although continued heavy use of sagebrush could lead to a downward trend in terms of deer winter range. The soil is fairly well protected and the site is level so soil loss is not a major concern. Soil trend also appears to be stable.

1994 TREND ASSESSMENT

The soil trend is slightly down because of the loss of much of the litter cover and the increased percentage of bare ground. Again, this trend has been noted throughout much of Utah especially at the lower elevation sites with the prolonged drought we have been experiencing since the late 1980's. This will turn around with near normal precipitation patterns. The browse trend, especially for the sagebrush, is up with decreases in those classified with moderate to heavy use (88% to 2%), decreased decadency (47% to 14%), increase in density, and an increase in seedling recruitment (12% to 46%). Trend for the herbaceous understory is stable. The forb component for the herbaceous understory is almost nonexistent but nested frequency of scarlet globemallow has increased.

TREND ASSESSMENT
soil - slightly down (2)
browse - up (5)
herbaceous understory - stable (3)

2000 TREND ASSESSMENT

Trend for soil appears to be slightly down due to an increase in cover of bare ground and a continued decline in litter cover. Litter cover has been declining steadily since 1986, mostly due to the decomposition of chaining litter. Bare ground has increased with each reading and is now high at 47%. On the positive side, erosion does not appear to be a problem due to the gentle terrain and the abundance of crested wheatgrass which has remained stable since 1986. The browse trend continues to improve with density increasing by 51% since 1994 and percent decadency declining from 14% to 11%. Young plant recruitment has increased from 16% to 32%. Use is mostly light to moderate and vigor good. The only negative aspect of the browse trend is the more than 4-fold increase in broom snakeweed density (420 to 8,940 plants/acre). Most of the population consists of mature and decadent plants so it does not appear that this population will continue to increase in the immediate future. The herbaceous trend appears stable with nested frequency of crested wheatgrass remaining stable. Forbs are still rare except for scarlet globemallow.

TREND ASSESSMENT
soil - slightly down (2)
browse - up (5)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 11B, Study no: 3

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'94	'00	'86	'94	'00	'94	'00
G	Agropyron cristatum	298	289	301	98	98	94	15.34	16.43
G	Agropyron dasystachyum	-	-	3	-	-	2	-	.01
G	Agropyron smithii	$_{b}$7	$_{a}$-	$_{ab}$-	3	-	-	-	-
G	Agropyron trachycaulum	$_{b}$5	$_{a}$-	$_{a}$-	3	-	-	-	-
G	Oryzopsis hymenoides	1	-	-	1	-	-	-	-
G	Poa secunda	-	1	-	-	1	-	.00	-
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		311	290	304	105	99	96	15.34	16.44
Total for Grasses		311	290	304	105	99	96	15.34	16.44
F	Astragalus convallarius	1	-	5	1	-	2	-	.23
F	Eriogonum ovalifolium	-	1	-	-	1	-	.00	-
F	Leucelene ericoides	-	-	3	-	-	1	-	.00
F	Lepidium spp. (a)	-	-	-	-	-	-	-	-
F	Orobanche fasciculata	-	-	1	-	-	1	-	.00
F	Sphaeralcea coccinea	50	79	65	25	31	27	.50	1.23
F	Thermopsis montana	-	-	4	-	-	1	-	.15
Total for Annual Forbs		0	0	0	0	0	0	0	0
Total for Perennial Forbs		51	80	78	26	32	32	0.50	1.63
Total for Forbs		51	80	78	26	32	32	0.50	1.63

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 11B, Study no: 3

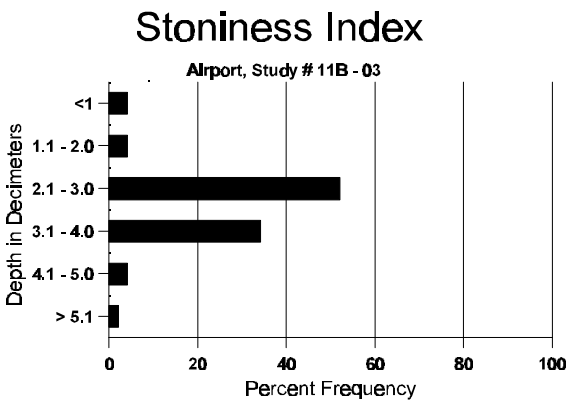
Type	Species	Strip Frequency		Average Cover %	
		'94	'00	'94	'00
B	Artemisia tridentata wyomingensis	32	49	4.21	5.21
B	Atriplex canescens	1	1	.03	.03
B	Chrysothamnus viscidiflorus stenophyllus	4	0	.15	-
B	Ephedra viridis	1	1	.38	.03
B	Gutierrezia sarothrae	11	54	.52	2.72
B	Opuntia polyacantha	10	8	.00	.03
Total for Browse		59	113	5.30	8.03

BASIC COVER --
Herd unit 11B, Study no: 3

Cover Type	Nested Frequency		Average Cover %		
	'94	'00	'86	'94	'00
Vegetation	306	324	3.25	21.21	27.20
Rock	325	50	.50	5.38	.18
Pavement	358	354	18.00	5.61	9.19
Litter	384	347	50.75	15.90	14.14
Cryptogams	14	73	0	.11	1.45
Bare Ground	355	367	27.50	31.23	47.47

SOIL ANALYSIS DATA --
Herd Unit 11B, Study # 3, Study Name: Airport

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.17	55.8 (13.54)	7.8	59.6	19.8	20.6	1.0	7.5	291.2	0.6



PELLET GROUP FREQUENCY --
Herd unit 11B, Study no: 3

Type	Quadrat Frequency		Pellet Transect	
	'94	'00	Pellet Groups per Acre '00	Days Use per Acre (ha) '00
Rabbit	50	73	687	N/A
Elk	1	1	-	-
Deer	8	22	305	24 (58)
Cattle	4	10	17	2 (4)

BROWSE CHARACTERISTICS --
Herd unit 11B, Study no: 3

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	86	2	2	-	-	-	-	-	-	-	4	-	-	-	133			4
	94	26	-	-	-	-	-	-	-	-	26	-	-	-	520			26
	00	12	-	-	-	-	-	-	-	-	12	-	-	-	240			12
Y	86	2	1	4	-	-	-	-	-	-	7	-	-	-	233			7
	94	6	-	-	-	-	-	-	-	-	6	-	-	-	180			9
	00	35	-	-	2	-	-	-	-	-	37	-	-	-	740			37
M	86	-	1	9	-	-	-	-	-	-	10	-	-	-	333	18	22	10
	94	35	-	-	-	-	-	-	-	-	35	-	-	-	780	22	34	39
	00	37	26	2	-	-	-	-	-	-	65	-	-	-	1300	18	23	65
D	86	-	-	13	-	-	2	-	-	-	15	-	-	-	500			15
	94	7	-	1	-	-	-	-	-	-	6	-	-	2	160			8
	00	2	5	2	2	1	-	-	-	-	7	-	-	5	240			12
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	220			11
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	340			17

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	06%	88%	00%	+ 5%
'94	00%	02%	04%	+51%
'00	28%	04%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'86	1066	Dec:		47%
'94	1120			14%
'00	2280			11%

Atriplex canescens																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	44	63	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	44	56	0
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	1	-	-	-	-	1	-	-	-	20			1
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'94	00%	00%	00%	+ 0%
'00	100%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'86	0	Dec:		0%
'94	20			0%
'00	20			100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus stenophyllus																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	4	-	-	1	-	-	-	-	-	5	-	-	-	100	6	12	5
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	86	-	-	3	-	-	-	-	-	-	3	-	-	-	100			3
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	100%	00%	+ 0%
'94	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'86	100	Dec:	100%	
'94	100		0%	
'00	0		0%	

Ephedra viridis																		
Y	86	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	86	1	1	1	-	-	-	-	-	-	3	-	-	-	100	17	6	3
	94	11	-	-	-	-	-	-	-	-	11	-	-	-	220	24	31	11
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	1	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	25%	25%	00%	+40%
'94	00%	00%	00%	-91%
'00	00%	100%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'86	133	Dec:	0%
'94	220		0%
'00	20		100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	3	-	3	-	-	-	-	-	-	6	-	-	-	120			6
Y	86	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	7	-	2	-	-	-	-	-	-	9	-	-	-	180			9
M	86	1	-	-	-	-	-	-	-	-	1	-	-	-	33	6	4	1
	94	21	-	-	-	-	-	-	-	-	21	-	-	-	420	9	11	21
	00	365	-	-	-	-	-	-	-	-	365	-	-	-	7300	7	12	365
D	86	6	-	-	-	-	-	-	-	-	6	-	-	-	200			6
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	72	-	-	-	-	-	1	-	-	14	-	-	59	1460			73
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'94	00%	00%	00%	+37%
'00	00%	.44%	13%	+95%

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	266	Dec:	75%
	'94	420		0%
	'00	8940		16%

Juniperus osteosperma

X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'94	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'94	0		-
	'00	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia polyacantha																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	86	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	86	7	-	-	-	-	-	-	-	-	7	-	-	-	233	4	6	7
	94	12	-	-	-	-	-	-	-	-	12	-	-	-	240	3	15	12
	00	11	-	-	-	-	-	-	-	-	11	-	-	-	220	3	6	11
D	86	5	-	-	-	-	-	-	-	-	-	-	5	-	166			5
	94	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	38%	-40%
'94	00%	00%	08%	- 8%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	432	Dec:	38%
	'94	260		8%
	'00	240		8%